

CONNECTICUT RIVER FLOOD CONTROL

TOWNSHEND DAM & RESERVOIR

WEST RIVER , VERMONT

SUPPLEMENT A TO DESIGN MEMORANDUM NO. 9

MASTER PLAN FOR RESERVOIR DEVELOPMENT



**DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.**

MAY 1966



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

IN REPLY REFER TO:

NEDED-R

12 May 1966

SUBJECT: Townshend Reservoir, Connecticut River Basin, Vermont
Supplement A to Master Plan for Reservoir Development.

TO: Chief of Engineers
ATTN: ENGCW-O

1. Submitted for review and approval is Supplement A to Design Memorandum No. 9, Master Plan for Reservoir Development, in accordance with EM 1130-2-302.

2. The plan has been developed to provide for maximum use of the reservoir by the public consistent with the resources of the area and the authorized flood control function of the project.

3. This plan has been coordinated with and concurred in by the Operations Division and the Real Estate Division.

FOR THE DIVISION ENGINEER:

Incl. (quad)
as

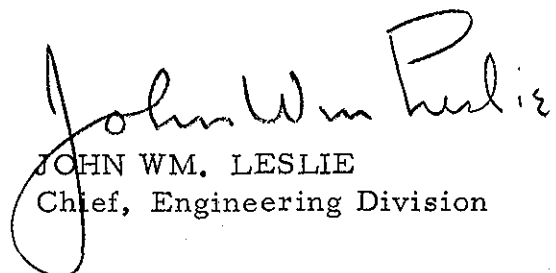

JOHN WM. LESLIE
Chief, Engineering Division

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SUPPLEMENT A
to
DESIGN MEMORANDUM NO. 9

MASTER PLAN FOR RESERVOIR DEVELOPMENT
TOWNSHEND FLOOD CONTROL RESERVOIR
WEST RIVER, VERMONT

MAY 1966

1. AUTHORITY

Supplement A has been prepared in accordance with EM 1130-2-302, Section 10, paragraph c. (1) for the updating of Master Plans.

2. PURPOSE AND SCOPE

Townshend Reservoir, with a 100-acre pool and public-use facilities, provides a valuable recreational asset to the southern Vermont region. Public visitation has greatly exceeded anticipated figures necessitating Master Plan revisions and additional recreational development. The purpose of this supplement is to update the April 1961 Townshend Reservoir Master Plan in order to continue the comprehensive and coordinated development, management and public use of reservoir lands for purposes compatible with the authorized project. The scope includes an evaluation of recreational potential, a description of existing facilities, an outline of modification and proposed development, and a discussion of reservoir management.

3. PRIOR REPORTS

Townshend Dam and Reservoir Design Memorandum No. 9, entitled "Master Plan for Reservoir Development", was approved in May 1961. A Detailed Report on the Fish and Wildlife Resources in Relation to the Water Development Plan for Townshend Dam and Reservoir dated March 1959 was obtained from United States Department of the Interior, Fish and Wildlife Service.

4. DESCRIPTION

Details of project location, local climate, flood control facilities, reservoir topography and fish and wildlife resources are described

in the Master Plan. The Townshend Flood Control project presently covers 1,008 acres of government fee-owned property and 208 acres of flowage easement. Types of fee-owned land and water areas available are listed below.

<u>Type</u>	<u>Acres</u>	<u>% of Total</u>
Woodland	330	33
Agricultural	62	6
Upland Brush	40	4
Open Land	225	22
Borrow area	50	5
Swamp	33	3
Recreational pool @ Elev. 478	100	10
West River	52	5
Rte. 30 Highway Relocation	75	8
Flood Control Structures	<u>41</u>	<u>4</u>
Total	1,008	100%

5. RECREATIONAL POTENTIAL

a. Project Visitation. Statistics obtained by applying random on-site visitor interview surveys to vehicular traffic counts indicate that approximately 190,000 people visited Townshend Reservoir during Calendar Year 1964. This more than tripled the annual attendance figure of 55,000 anticipated for CY 1964 in the Master Plan.

b. Impact on Surrounding Recreational Areas. Plate No. 1-A shows the location, physical size and available activities at developed State and National recreational areas within approximately 40 miles of Townshend. Although Townshend Reservoir has received heavy public use, these surrounding areas have not experienced substantial changes in attendance. Some of the State Parks are currently approaching maximum stage of development. Attendance figures over the past 5 years indicate many of these areas have reached a saturation point and visitation has levelled off (see Table A). However, marked increases in attendance have been noted at sites where additional facilities have been added with little or no effect on attendance at adjacent recreational areas.

TABLE A
Annual Visitation
at
Public Recreation Areas

Developed Areas	Annual Attendance Figures				
	1960	1961	1962	1963	1964
<u>NATIONAL FORESTS</u>					
<u>VERMONT</u>					
Greendale	--	--	--	6,500	4,700
Hapgood	--	--	--	39,000	59,300
White Rocks	--	--	--	12,000	18,800
<u>STATE PARKS</u>					
<u>VERMONT</u>					
Ascutney	17,606	15,349	14,268	15,590	14,949
Dutton Pines	4,556	4,543	2,756	2,078	2,293
Emerald Lake	7,423	14,405	26,768	38,598	44,890
Gale Meadow Reservoir	--	--	--	--	Under construction
Gifford Woods	9,024	10,083	10,193	12,047	12,658
Molly Stark	3,967	7,522	10,032	12,391	13,733
St. Catherine	19,445	24,902	24,461	25,930	28,078
Wilgus	7,041	7,474	6,243	5,590	6,381
Woodford	--	--	--	--	--
<u>NEW HAMPSHIRE</u>					
Greenfield	--	--	5,000	15,525	70,784
Miller	18,955	16,571	17,614	19,727	18,534
Monadnock	46,482	41,333	43,805	42,671	45,795
Mt. Sunapee	179,505	208,392	207,578	197,943	221,755
Pillsbury	9,545	6,384	6,374	7,006	5,983
Rhododendron	8,505	3,203	3,298	3,528	3,566
Wadleigh	21,210	14,771	14,487	16,370	11,081
<u>MASSACHUSETTS</u> -- (Fiscal year attendance figures)					
Clarksburg	28,890	25,274	34,593	31,784	17,768
Taconic Trail	--	--	--	--	--
<u>STATE FORESTS</u>					
<u>VERMONT</u>					
Coolidge-Killington	45,314	78,668	111,929	184,112	196,128
Okemo	35,417	26,865	33,323	44,093	40,529
Townshend	3,561	3,778	3,387	4,640	6,395
<u>MASSACHUSETTS</u> -- (Fiscal Year attendance figures)					
Daughters of the American Revolution	21,848	22,441	26,062	21,184	17,912
Erving	56,735	47,324	56,699	44,136	45,913
Mohawk Trail	28,209	28,166	26,212	31,175	28,235
Monroe	--	--	--	--	--
Mount Grace	3,340	3,311	3,699	3,082	4,108
Otter River	48,160	51,029	54,654	61,772	83,418
Savoy Mountain	17,183	10,230	15,901	11,875	14,191
Windsor	19,971	17,137	17,241	12,217	12,101
<u>NED RESERVOIRS</u>					
<u>VERMONT</u>					
Ball Mountain	0	0	14,300	40,700	47,070
North Hartland	0	16,300	15,800	85,500	133,860
North Springfield	0	8,400	23,600	311,900	238,520
Townshend	0	0	18,500	226,900	189,990
<u>NEW HAMPSHIRE</u>					
Edward MacDowell	14,400	14,000	14,700	22,600	9,250
Otter Brook	13,000	53,000	48,000	58,100	89,740
Surry Mountain	29,200	31,200	14,000	41,000	65,130
<u>MASSACHUSETTS</u>					
Birch Hill	41,000	43,500	48,000	224,000	221,630
Tully	13,000	15,000	14,000	22,600	29,130

c. Accessibility. Development of the new high speed Interstate Highway System is placing the mountainous landscape of Vermont within easy reach of increasing numbers of in-state and out-of-state motorists. Week-end vacationers and winter sports enthusiasts now measure distances in terms of time rather than miles. Interstate Route 91, currently under construction, will stretch northward from the coast of Connecticut at New Haven, along the Connecticut River Valley of Massachusetts and Vermont to the Canadian Border. Sections of this multi-lane divided highway, now open to traffic, provide rapid year-round access from Western Massachusetts through the City of Brattleboro, Vermont, located at the mouth of the scenic West River Valley approximately 19 miles below Townshend Dam.

d. Regional Development. Townshend Dam controls flood waters from the upper reaches of the West River which flow down through a mountainous watershed containing some of the most popular winter resort areas in Vermont. Modern well-equipped slopes at nearby Stratton Mountain, Snow Valley and Big Bromley provide excellent winter skiing. Until recently, tourist trade has been accommodated mainly by local inns, motels and other commercial enterprises. However, the increased popularity of skiing coupled with the construction of high speed highways has stimulated the construction of motels, private lodges and chalets that provide year-round recreational opportunities. Establishment of restaurants, summer theaters and golf courses within moderate driving distances has also improved the recreational potential of this area. People primarily interested in winter activities are returning in increasing numbers to enjoy fishing in the spring, relaxation during the summer, white tail deer hunting in the fall and the magnificent scenery available throughout the year.

e. Public Use. The public-use development of Townshend Reservoir has met some of the basic recreational needs of this locality. The topography in the vicinity of the Reservoir is characterized by rugged terrain with rushing streams that flow into the West River Valley. Although the region is ideally suited for a variety of recreational activities, there are few natural bodies of water for public bathing, boating and other aquatic sports. The existing recreational facilities on the 100-acre permanent pool developed primarily for these activities at Townshend Reservoir have received heavy usage by both vacationers and local residents. Typical views are shown in photographs Figures No. 1 and 2.

TOWNSHEND RESERVOIR PUBLIC USE DEVELOPMENT



Figure 1

Westerly View of Beach and Parking Area
(Initial development)

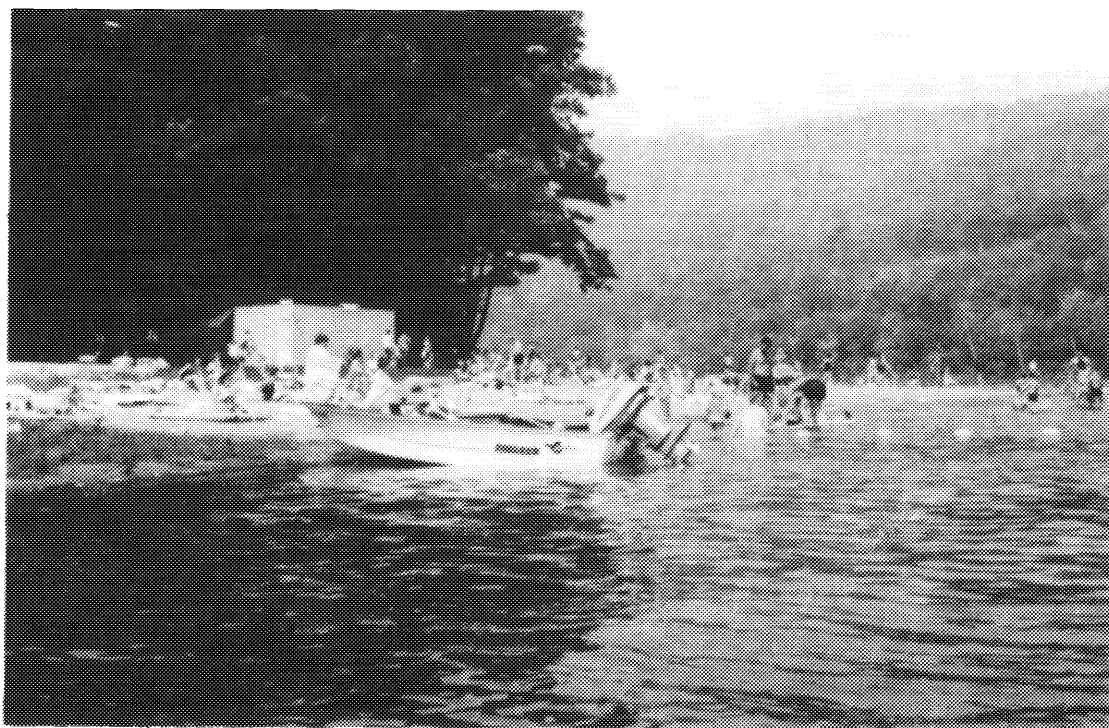


Figure 2

Easterly View of Beach and Change House
(Initial development)

6. EXISTING RECREATIONAL FACILITIES - (site locations are shown on Plate No. 2-A.)

a. Initial Day-Use Development FY-61

Site No. 1 - Easterly overlook

Observation area: surface-gravel

Parking area: surface-gravel
capacity - 70 cars

Site No. 2 - Westerly rest area

Sanitary facilities: comfort station -- flush type
concrete block building

Drinking water: bubbler-supplied by well

Parking area: surface-bituminous treatment
capacity - 10 cars

Site No. 3 - West Side Day-Use area

Main Access Road: bituminous treated surface

Boating facilities:

Dual-lane launching ramp-bituminous treated surface

Parking area: surface-bituminous treatment
capacity - 15 car-trailer units

Drinking water: limited quantity supplied by natural
spring

Bathing facilities:

Sand beach area: 2200 sq. yds.

Sand bottom swimming area: 2500 sq. yds.

Change house: concrete block building

Parking area: surface-bituminous treatment
capacity - 60 cars

Picnic facilities:

Tables: 37-wood frame
Fireplaces: 18-concrete block
Individual parking spaces: 20-gravel

Sanitary facilities: Chemical comfort station-
Concrete block building

b. Facilities Constructed FY-66

Site No. 3 - West Side Day-Use Area

Access road to picnic area: bituminous treated surface

Expansion of bathing facilities:

Sand beach area: 2,300 sq. yds.
Sand bottom swimming area:- 2,100 sq. yds.
Parking area: surface-bituminous treatment
additional capacity-114 cars

7. PROPOSED PLAN FOR ADDITIONAL EXPANSION AND IMPROVEMENT OF EXISTING AREAS

Additional development of existing day-use areas is required to adequately accommodate public usage based on 1964-1965 reservoir attendance.

Site No. 1

Bituminous surfacing of parking area	\$ 4,000
Observation Shelter	2,500
Log Barriers	1,500
Landscaping	2,000

Site No. 2

Landscaping	500
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Site No. 3 (Detail Plate No. 3-A)

*Water Supply	
Wells	\$ 6,000
Pressure system and piping	16,000
* Expansion of Change House	8,000
* Expansion of Sanitary Facilities	14,000
Selective clearing 4 acres @\$600/acre	2,400
Foot Bridge	1,500
Picnic Tables: 80 @\$90 /unit	7,200
Fireplaces: 40 @\$65 /unit	3,000
Trash receptacles: 20 @\$5	100
Road improvements: (picnic area)	3,000
Parking: (picnic area)	1,500
Foot Trails: 7,000 ft. @\$1.50 /ft.	10,500
*Removal of hazard in permanent pool	1,200
Signs	200
Sub-total	\$ 85,100
Contingencies	12,900
Sub-total	\$ 98,000
E&D and S&A	18,000
Total	\$ 116,000

*Priority Items

8. FUTURE RESERVOIR DEVELOPMENT

a. General recreational development of Townshend Reservoir is limited by the available water surface, terrain and forest cover. The steep topography of the remaining land surrounding the recreational pool is not readily adaptable to the construction of high density public-use facilities.

b. Day-Use Facilities

Development of a picnic and fishing area along the north-easterly edge of the pool is recommended, as required by future public demands. Parking will be located adjacent to relocated Route 30. Foot trails winding down the wooded bank from the parking area will provide access to the shore line. Scenic overlooks and picnic sites will be provided along the trails and shore line by selective clearing. A small

landing will permit access by boat from the launching area on the west side of the pool. Sanitary facilities and drinking water will be developed as needed. Use of abandoned Route 30 will be restricted to maintenance purposes only, due to severe washouts, and public traffic on this section of roadway will be prohibited.

Site No. 4 - East Side Day-Use Picnic and Fishing Area

Parking area	\$ 3,000
Surface: bituminous treatment	
Capacity: 30 cars	
Foot Trails: 2,000 ft. @\$1.50 /ft	3,000
Picnic Tables: 30 @\$90 /unit	2,700
Fireplaces: 30 @\$75 /unit	2,250
Trash Receptacles: 30 @\$5 /unit	150
Grading:	1,500
Selective clearing: 3 acres @\$600 /acre	1,800
Sanitary Facilities (pit latrines):	1,700
Water Supply	3,000
Signs	150
Sub-total	\$ 19,250
Contingencies	2,850
Sub-total	\$ 22,100
E&D and S&A	3,900
Total	\$ 26,000

c. Overnight Camping

Present demands for this activity are being satisfied by the camping facilities in the 703-acre Townshend State Forest adjacent to the reservoir. (See Figure No. 3). The State of Vermont has constructed 21 platform tent sites approximately 1.5 miles from Townshend day-use area No. 3. Drinking water, sanitary facilities and a number of spaces for other types of camping are available. State attendance figures show that public usage of this area has increased from 3,561 campers in 1960 to 6,395 campers in 1964. Continued public interest in this activity could necessitate the development of additional areas in the future.

TOWNSHEND RESERVOIR

MASTER PLAN-SUPPLEMENT A

VICINITY MAP

SCALE IN MILES



Figure No. 3

Development of camping facilities at Townshend Reservoir has been carefully evaluated. Investigation of the 300-acre section of forest land above spillway elevation on the westerly side of the reservoir revealed that the topography is excessively steep for this type of activity, and that natural locations with suitable contour and cover are relatively small and widely scattered. In view of the unfavorable topography, close proximity of state facilities and present public demands, development of family camping at Townshend Reservoir is not considered practical as part of this supplement.

9. LAND ALLOCATION

The allocation of project lands is shown on Plate No. 2-A. Reservoir lands not required for project operation and maintenance will be available for recreational purposes. Development of day-use facilities for swimming, picnicking, fishing and boating will be concentrated along the east and west shores of the recreational pool. The remaining lands will be available for forestry and fish and wildlife management. The forested slope above the west side of the pool will be accessible by foot trails for primitive picnicking, hiking and nature study. The reservoir lands north of the recreational pool will be open to public fishing and hunting in accordance with Vermont State Fish and Game regulations.

Several sections of grass land on the flood plains at the northerly end of the reservoir are available for agricultural management. Leasing of these lands to private individuals for cultivation purposes will be permitted providing such activities are compatible with public hunting and fishing. Fee land allocations and descriptions are listed in Table B.

10. RESERVOIR MANAGEMENT

Townshend Reservoir with existing public-use facilities is currently being operated and maintained by Corps personnel in accordance with the original master plan. Corps representatives have coordinated with Vermont State officials in an effort to negotiate a long-term recreational lease for state management of this area in conjunction with Townshend State Forest. However, prior Federal restrictions on user fees have presented a number of obstacles to the funding of state operation and maintenance activities. Enactment of the Land and Water Conservation Act of 1965 permits lessees and licensees holding public park and recreational leases to collect admission fees. Renewed efforts will be made to encourage state management on this basis.

TABLE B

Fee Land Allocations & Descriptions

<u>Designation</u>	<u>Acreage</u>	<u>Cover</u>	<u>Elev.</u>	<u>Terrain</u>
<u>West Side Day-Use Area</u>				
Primitive Picnicking, hiking and nature study	260	Heavily wooded	550-1100	Rugged
High density public use	30	Open-wooded	478-550	Rolling
<u>East Side Day-Use Area</u>	30	Open-wooded	478-550	Rolling-rugged
<u>Easterly Overlook Area</u>	3	Open	600	Flat
<u>Westerly Rest Area</u>	1	Open	583	Flat
<u>Recreational Pool</u>	100	Open water	478	N. A.
<u>Area Reserved for O&M of Project Structures</u>	104	--	--	--
<u>Borrow Area</u>	50	Open	480-500	Flat
<u>Agricultural Area</u>	62	Grass	520-530	Flat
<u>Route 30 Highway Relocation</u>	75	Open	580-640	Rolling
<u>Remaining Land Area</u>	293	Open-wooded	478-583	Flat-rugged

The Corps of Engineers will continue to manage Townshend Reservoir pending acceptance of this area by the State of Vermont. This will include maintenance of reservoir roads and public-use facilities subject to the availability of funds. Expansion of day-use facilities will require the seasonal employment of additional help for this purpose.

11. CONCLUSIONS

Townshend Flood Control Reservoir provides a valuable recreational resource to the southern Vermont region. Existing day-use facilities are inadequate to accommodate present public usage. Future demand for recreational day-use activities at this project is expected to increase with private development of the surrounding locality and completion of Interstate Route 91. The recreational development plan contained herein is considered necessary and adequate to accommodate these needs for the next 10 years.

12. RECOMMENDATIONS

It is recommended that this supplement be approved as a basis for the preparation of plans and specifications and that funds for its implementation be appropriated from the Code 710 program for construction of recreational facilities at completed flood control reservoirs.

DRAWINGS



